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**Experiments**  
in  
**Drawing and Painting**  
by

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Lecturer on Design in Harvard University

Exhibition  
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**The Century Association**  
of  
**New York**



## EXPLANATION

This is an exhibition of Experiments in Drawing and Painting. They have been made to illustrate a Theory of Design and are used, many of them, in connection with our teaching at Harvard.

By Design I mean two things: Symmetry in Space-Relations and Harmony in Tone-Relations. Symmetry is based on Geometry, Harmony is based on the Set-Palette. That, briefly, is my theory.

First of all; we want the student to see as the designer sees, as the artist sees. If he cannot do that he will never have any understanding or appreciation of Art. The artist, more than others, is moved by the Love of Order and the Sense of Beauty. It is Order and the Beautiful that he looks for in Nature, and longs to reproduce and represent in his work.

I have arranged a collection of photographs and drawings in the West Alcove of the Gallery. In the East Alcove I have arranged a series of set-palettes, with some of the paintings which have been produced in using them.

In the Main Gallery I have arranged a number of examples and illustrations of my practice of drawing and painting and of Design; according to my theory. There are portraits and figure-studies and some landscapes. The compositions, most of them, are based on geometric triangulations. In all cases I

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have used one or another of my set-palettes. There is a portrait of Jay Hambidge, another of George Santayana and several portraits of ladies.

The portraits and figure-studies have been painted in almost all cases from life, though they have been repainted again and again without the model; to complete and perfect the design.

There is a group of landscapes produced in Mexico last spring. There is another group of landscapes produced during the past summer in or near Cambridge. There is a lot of sketches and studies done at different places abroad. Most of these were done some years ago. They are not so strict in their symmetry. I was using the Geometry of Design in those days but I did not know how to use it.

The drawings and paintings exhibited are not exhibited as works of Art but as the illustrations of a Theory, my Theory of Design. I am trying, in my experiments and practice, to follow tradition and the best precedents of the Art: proceeding with the love of Nature and Life and of what is best in Art, whether it be of the Past or the Present.

The photographs shown are from a large collection taken for me and under my direction, by my assistant, Mr. Parker. The subject, the point of view, the composition and the effect of light are mine. For the effect of light I have north and south windows, two portable electric lights, hot and cold, diffusing screens and mirrors for reflections. When I get the effect I want, the photograph is taken.

The photograph being produced, I put it on a drawing board and, using a white pencil, a T square



and a right-angled triangle, I draw over the photograph the lines of my composition. The triangle I use is, as a rule, the triangular half of one or another of Mr. Hambidge's rectangles or of a combination of two or more of them. I find it easier to get good compositions with triangles than in rectangles. Used as a module, the right-angled triangle is a wonderful instrument. It ought to be in the left hand of the artist, as constantly as he has, in his right hand, a pencil or a brush.

With my photographs and composition schemes I am showing a series of drawings. In some cases the drawings are based upon the triangulations I have made over the photographs. In other cases they have been made directly from the model.

When it comes to drawing or painting from the model, from Nature, I take the photograph over which I have drawn the lines of my composition and I put it by the side of my canvas. I see my model and in connection with the model I see my composition. I see my subject and I see a geometric formula. The problem is to bring life into the formula by putting the subject into it. In the end the formula disappears and it is my hope that the Truth of Representation may be achieved in a form of Order and Beauty. I aim at Order and hope for Beauty.

In producing the composition it is possible to modulate from the directions and angles of one triangle to those of another; from one system of triangulation to another, if there is a good reason for doing so: but the systems combined must have one or more elements in common. Otherwise the sym-



metry of the composition will be broken, and instead of order there will be disorder.

It is a mistake to waste time drawing for the facts of position, measure and shape when you will, afterwards have to bring these facts into the lines of your composition. The photograph gives me the facts better than I can possibly draw them. I use photographs just as the speaker or the writer uses books of reference: to get the information he wants, in connection with his subject. When he speaks or writes we expect him to speak well, to write well. That means that the facts appropriate to the subject must be organized into a form of design. We expect a beginning, a middle and an end; and the result should be "like a living organism, producing its proper pleasure." That is what Aristotle tells us in his Poetics. We expect in the speech or the book, not an offering of statistics, but a work of Art. In the drawings I am showing there is no copying either of photographs or of the model. It is my design that I draw, with my subject in it.

The lines drawn with the triangle are all straight. They must be drawn again with a free hand. Curves must be drawn. They must be drawn with a free hand. The curves so drawn, however, should be strictly determined by the straight lines and angles of the preestablished triangulation. There must be a perfect coordination of all the lines of the drawing whether they are straight or curved.

When I have no photograph of my subject, and no predetermined composition: and that happens constantly, I begin by establishing, on my paper or can-



vas, a central vertical and, crossing it, a central horizontal. I then look at my subject and make up my mind which one of many possible diagonals will be the best one for the purpose. I draw that diagonal and another to balance it and reciprocal lines crossing the diagonals at right angles. These six lines will give me the directions and angles of a single right angled triangle and are all I require. I make my drawing and the lines of my triangulation become the lines of my representation. It is not necessary, therefore to use either photographs or triangles. There is no good precedent for using them and there is a strong prejudice against using them. I consider the prejudice unreasonable. I propose, in my own practice, to use every means that Science offers me; every means that will help me to achieve the Truth of Representation in a form of Design which will suggest the Order and Beauty that I find in Nature and hope to produce in my work. It must be remembered that the Laws of Order in Nature are the principles of Design in Art.

Considering the Art of Music and the use of musical instruments, it seems that the musician has a great advantage over the painter in having a fixed scale of tones and definite rules for using it,—rules based on good precedents and representing the practice of recognized masters. Thinking of musical instruments and the laws of Counterpoint and of Harmony, the question comes up, whether it may not be possible for the painter, also, to have an instrument of precision, in his palette, so that the production of



effects of light and color will be a well-ordered procedure. If this is possible, the mind of the painter may be released from the difficulties of the palette and given to the problems of Subject, Design and the Truth of Representation. After giving more than twenty years to the consideration of this question and to experiments in the use of set-palettes, I am fully persuaded that it is perfectly possible to make the painter's palette an instrument of precision,—an instrument which will serve him both as a mode of thought and a means of expression. He will then use his palette very much as the musician uses his violin or the piano.

The simplest of my palettes is a Scale of Neutrals, representing quantities of light between the extremes of Black and White. Black means total darkness; White the light of day. The intermediate neutrals of this scale may be produced by mixtures of black and white; or, better, by mixtures of complementary colors pulled up to the proper values by white. The Scale of Neutrals is the palette to be used in drawing. The scale should be limited to black, white and not more than seven intermediates. Five or even three may be enough.

With the Scale of Neutrals we may use a Scale of Reds; Light Red for example, pulled down with black and up with white. A Scale of Yellow may be added; Yellow Ochre, for example, pulled down with black and up with white. A palette like this; of Black, White, a Red and a Yellow was constantly used by the painters of the Renaissance.

I find this passage in Leonardo's Treatise on



Drawing and Painting: "Black and white are not reckoned among colors; one represents darkness, the other light . . . . . With the colors I begin my mixtures, first black and white, black and yellow, black and red; then yellow and red; but I shall go into this matter in a separate work which will be useful and necessary." Unfortunately no such work has come down to us.

If there is occasion to add a third color to a palette of black and white with two colors, another scale of neutrals will be required. I am showing a palette of Red (Mars Red), Yellow (Aureolin) and Blue (Cobalt) coordinated with two scales of neutrals. As the Mars Red and the Cobalt Blue neutralize one another the neutrals between them may be produced by straight-across mixtures; with, possibly, a little white to bring them to their proper values.

When the colors of the palette are complementaries and neutralize one another it is unnecessary to use any mixtures of black and white. They are not really neutrals. They are blue, not gray. Black for darkness, and white, for light, must be used; but the intermediate neutrals may be produced by complementary mixtures. There are palettes of complementaries: palettes of Reds and Greens, of Violets and Yellows, of Oranges and Blues; or of Orange-Reds and Green-Blues. I am showing three palettes of complementaries. They may be used two or all three of them in the same composition; in different parts.

It is possible to combine two or more complementary balances in one palette. I am showing how this may be done in three palettes. One of them is



the palette of Violet up to Red, Orange and Yellow. Another is the palette of Violet, up to Blue, Green and Yellow. There is one more; the palette of Violet and Red-Orange up to Yellow.

The rule to follow, in using any of these palettes, is to use the tones of the palette as they come; or mixtures of not more than two of them. Having given any tone its position, measure and shape on the canvas and finding that it requires modification, correct it with its complementary. By the complementary it will be more or less neutralized. Being sufficiently neutralized it will fall at once into its plane. When the tone which is put on the canvas is a mixture of two on the palette, and it does not seem quite right, a complementary mixture on the palette may be used to correct it. Complementary mixtures will be found on the horizontal lines and on the crossing diagonal lines of the palette. The intermediate neutrals are complementary mixtures. When opposite colors on the palette are not complementaries intermediate neutrals of black mixed with white serve the purpose and give all the neutralizations required.

In using these set-palettes it is very important; not to lose the Sequences of Repetition, of Alteration and of Progression of which they are composed; and not to miss the Tone-Balances which are established on them. Each palette is an example and illustration of Pure Design: an example of Order and Harmony in tone-relations. The Order and Harmony of the palette is to be maintained in using it; and should be distinctly felt in the results and effects produced

The attempt to reproduce the tones of the sub-



ject as seen in Nature is futile. It is a relativity we see. What produces it we do not know and cannot find out. The only thing to do is to create a relativity which will serve the purpose and express what we wish to express. We have what we require in a well-chosen and carefully set palette. The consistency and harmony of the palette is reproduced in the picture and the truth which is achieved in the representation will be, as it should be, the truth of the imagination. If it is not that, try it again, possibly with another palette. Go on so doing until you get it right according to your idea.

An idea which I have constantly in mind in my teaching and in my work, is well expressed by Poincaré, the mathematician: in the introduction to his book on the Value of Science; where he says; "What we call objective reality is, in the last analysis, what is common to many thinking beings, and could be common to all; this common part, we shall see, can only be the harmony expressed by mathematical laws. It is this harmony then which is the sole objective reality, the only truth we can attain; and when I add that the universal harmony of the world is the source of all beauty, it will be understood what price we should attach to the slow and difficult progress which little by little enables us to know it better."

Denman W. Ross